# NOOS survey of requirements for data for lateral boundary conditions

In 2011, NOOS conducted a survey of its members to gauge their requirements for near real-time ocean model data to provide lateral boundary data for national ocean forecasting systems. This document contains a summary of the results.

To date there have been 7 responses, each covering a different forecasting system. Of these, 4 require boundary conditions from a tidal model of the NW European shelf, and 3 require boundary conditions from a non-tidal deep ocean model.

The survey asked for requirements for the following attributes of the data:

- Temporal resolution
- Horizontal resolution
- Vertical resolution (specified as a near-surface grid-box thickness)
- Timeliness (how soon the data is available after its validity time)
- Forecast length
- Oceanographic parameters required

The survey used two levels of requirements, defined by the WMO:

- The "threshold" requirements define the minimum acceptable service, below which the data is of little use.
- The "breakthrough" (or "target") requirements define a high quality service, which would result in a significant improvement in the downstream application.

The survey is still open and further responses will help to define future requirements. Any user requiring lateral boundary conditions for models running in the NOOS region can complete the survey at: http://www.surveymonkey.com/s/9JWLD6C

## Data from a tidal model of the NWS

The table below summarises the range of responses for each attribute.

| Attribute | Threshold requirements | Target requirements |
|---|---|---|
| Temporal resolution | 3-24 hr | 1 hr |
| Horizontal resolution | 5-20 km | 1 km |
| Vertical resolution | 5-10 m | 1 m |
| Timeliness | 12-24 hr | 6-24 hr |
| Forecast length | 2-5 days | 5-15 days |

Note that where a frequency of 24 hours was requested, the users requested that these have the lunar tide removed, for example by using a 24.8 hour meaning period.

Below we list all of the oceanographic parameters which were requested for each requirement level. Some were only requested by one or two users.

| Threshold requirements | Target requirements |
|---|---|
| Potential temperature<br>Salinity<br>Sea surface height<br>Nitrate<br>Phosphate<br>Phytoplankton biomass | Potential temperature<br>Salinity<br>Sea surface height<br>Sea-ice<br>Attenuation coefficient<br>Chlorophyll<br>Dissolved oxygen<br>Nitrate<br>Phosphate<br>Phytoplankton biomass<br>Primary productivity |

## Data from a deep-ocean model

The table below summarises the range of responses for each attribute.

| Attribute | Threshold requirements | Target requirements |
|---|---|---|
| Temporal resolution | 24 hr | 3-12 hr |
| Horizontal resolution | 9-20 km | 8-12 km |
| Vertical resolution | 5-10 m | 1-3 m |
| Timeliness | 12-24 hr | 6-9 hr |
| Forecast length | 3 days | 3-10 days |

Below we list all of the oceanographic parameters which were requested for each requirement level. Some were only requested by one or two users.

| Threshold requirements | Target requirements | |
|---|---|---|
| Potential temperature<br>Salinity<br>Sea surface height<br>Currents<br>Sea-ice | Potential temperature<br>Salinity<br>Sea surface height<br>Currents<br>Sea-ice<br>Attenuation coefficient<br>Chlorophyll<br>Dissolved oxygen<br>Nitrate<br>Phosphate | Ammonium<br>Silicate<br>Iron<br>Phytoplankton biomass<br>Primary productivity<br>Zooplankton<br>Detritus<br>Carbon Dioxide<br>Alkalinity |